

Introducing feedback thinking and simulation in ECOSTATO training programme

Gianluca Colombo, Marco Meneguzzo, Ferdinando Monte.

University of Lugano,
Laboratory of System Modelling,
via G. Buffi, 13
CH 6900 Lugano
gianluca.colombo@lu.unisi.ch
marco.meneguzzo@lu.unisi.ch

Tel +41 (0)91 9124 735
fax +41 (0)91 9124 647

Edoardo Mollona
Università degli Studi di Bologna
Department of Computer Science
Mura Anteo Zamboni, 7
40127 Bologna
Italy

edoardo.mollona@uni-bocconi.it
emollona@cs.unibo.it

tel +39 051 209 4883
fax +39 051 209 4510

Extended abstract

ECOSTATO is an application of system dynamics to the financial policies of the Ticino State. The project was undertaken by the LSM (Laboratory of System Modelling of the University of Lugano) as a pedagogical tool to be used in the training programmes of the State Department of Human Resource Management (CEFOS - Training and development centre of Ticino State). ECOSTATO is particularly target to the recently hired civil servants. When CEFOS approached the LSM, the client's needs were initially defined in the following terms: "We would like to update a pedagogical game that we have been used successfully for many years. Our game is about the formation of the State Budget and we used it to train our new personnel. The game was developed at the mid of the '80s and we need to update it both in term of contents and methodology, considering that the State financial policies have tremendously changed in the last few years. We would like to include the new logic of the public sector interventions and we could also exploit some modern pedagogical approaches based on IT" (first meeting with Paolo Boscacci, CEFOS Director - November 2002). From this first meeting we understood that system dynamics was not considered by the client a crucial element of the project, as the old ECOSTATO was mainly a mechanical exercise on the formation of the State Budget. Nevertheless we were convinced that it would have been very important to focus the participants' attention to the medium term effects of the budget policies on the economic and social system. Our assumption was supported by the way the old game was designed. In fact participants played the role of political actors who had first to propose a programme

for the State general election, then administrate the budget and finally pass a new election after a 4-year term. After few meeting with the clients we were able to refocus the project objectives in the following terms.

The State of Ticino Canton is facing new internal and external complexities deriving form economic, social and environmental dynamics. Among the major issues, the following seem particularly crucial:

- The economic sectors of Ticino are rapidly getting mature and global;
- Ticino is more and more integrated into the EU economic space;
- The concept of sustainable development is getting audience in the public opinion;
- The demographic situation will have a great impact on the social expenses;
- The State has to undertake complex infrastructural investments with relevant costs and relevant impact in the long term;
- The State is asked to promote the Region competitiveness, through Human Capital development.

In this context the State Budget will play a crucial role and politicians will more and more evaluated not only in terms of the solidity and compatibility of their financial policies, but also on their ability to identify clear priorities for the political agenda.

This is a new challenge for the State and it will imply to develop a new set of competences not only in the financial area, but also in the understanding of the systemic effects of the State policies and decisions.

For these reasons CEFOS decided to ask the LSM to elaborate a new version of ECOSTATO, in which system dynamics is used to create a simulation model of the effects of the States decisions both on the State budget and on the economic and social environment. The model would be used to evaluate the trainees' decisions in terms of:

- Their impact on the State budget (yearly and at the end of the legislation - 4 year term);
- The impact of the legislation on the Ticino economy, measured through the quantitative indicators;
- The impact of the Government policies on specific industries;
- The effects of these policies on the Human Capital development;
- Their environmental sustainability of these policies.

The project has been developed during 15 months and was articulated in the following phases:

1. Diagnosis:
 - a. Analysis of the behaviour of the Ticino's economic system and redefinition of the research questions;
 - b. Analysis of the priorities of the State interventions;
 - c. Analysis of the actors' roles and of the decision process.
2. First Model design (simple version):
 - a. Mapping the key resources;
 - b. Identification of the major loops;

- c. Identification of the systemic structures;
 - d. Analysis of the structure - behaviour relationships;
 - e. Temporal lags analysis;
 - f. Model validation
3. Simulation and model fine tuning:
- a. Testing the model with a group of senior trainers (i.e. with the group that already used the old ECOSTATO);
 - b. Testing the model with a group of new trainers, with no experience of the old ECOSTATO;
 - c. Elaboration of the final prototype of the model
 - d. Testing the prototype with a first group of trainees

The Diagnosis was conducted at two levels. First of all we collected data on the Ticino economy, based on public second hand sources (State Statistics department, Chamber of Commerce, Industrial Association, and so on), in order to build a description of the economy and its recent performances. Secondly we interviewed top and middle level civil servants, to get a list of the Administration priorities in various fields: education and research, infrastructures and mobility; social services; labour market; fiscal policy, etc. The interviews were also used to understand the formal and informal aspects of the political decision making process. One very delicate issue in this phase was to obtain a clear description of the political agenda. As a matter of fact the beginning of our project coincided with the begging of a new legislation and thus with a hard phase of negotiations among political parties to share a common agenda for the Government. Several months were spent to try to finalise a list of priorities, as our counterparts in the administration were in a sort of standby, waiting for parties' decisions.

Our first simple model was finally designed on the bases of the information we collected and around an dynamic engine which reflects a simplified Keynesian economic system.

The second crucial process turning point emerged when we shared this initial version of the model with the senior trainers. As a matter of fact they tend to remain stickled to the old logic of ECOSTATO, centred to mechanics of the State budget more than to the effects of the political decisions. They expressed a strong need for a pedagogical tool that could be used in training participants on the budget preparation. The evaluation of the systemic effects of the budget policy was considered important for more sophisticated and high level training programmes. We finally understood that what we have negotiated with the CEFOS director was not completely transferred to our interlocutors. This issue was extremely relevant as the senior trainers have a great influence on the all target groups: new trainers and future trainees. We dealt with this issue negotiating a project enlargement in which the new ECOSTATO is used after a basic training on budget preparation, using traditional pedagogical tools.

What can be learn from a process point of view is that the project's objectives need to be clearly negotiated not only with the key counterpart, which can take the final decision about the project, but also with the other relevant actors which may play an influential role during the process. Their commitment is obviously crucial to determine the success or the failure of the entire project.